

Changes and Challenges in Gulf of Mexico

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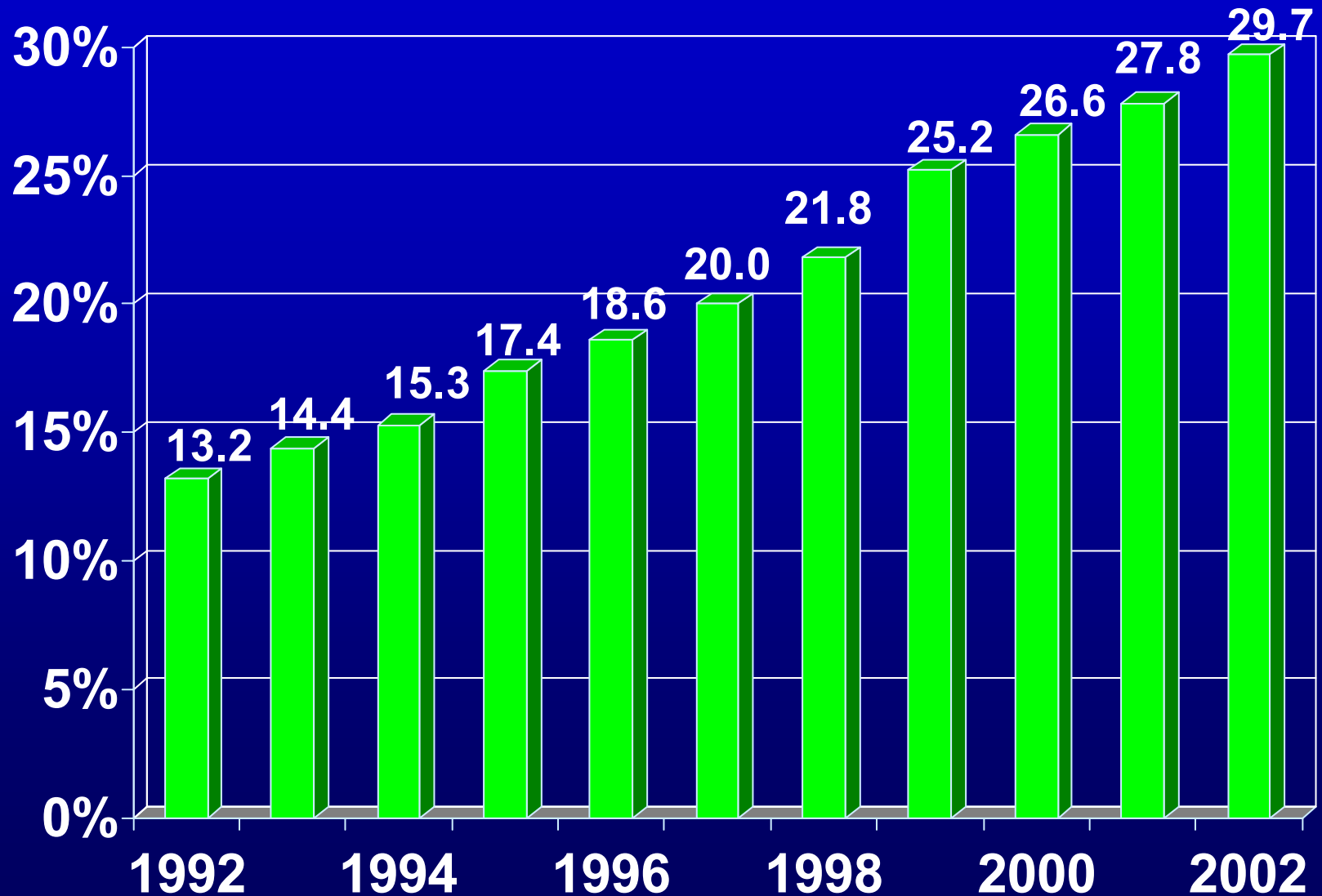
Regional Director
Gulf of Mexico OCS Region
Minerals Management Service

Strategic context

- Natural gas
 - Gulf is a major supplier
 - EIA assumes/predicts GOM gas contribution grows

OCS Oil Production

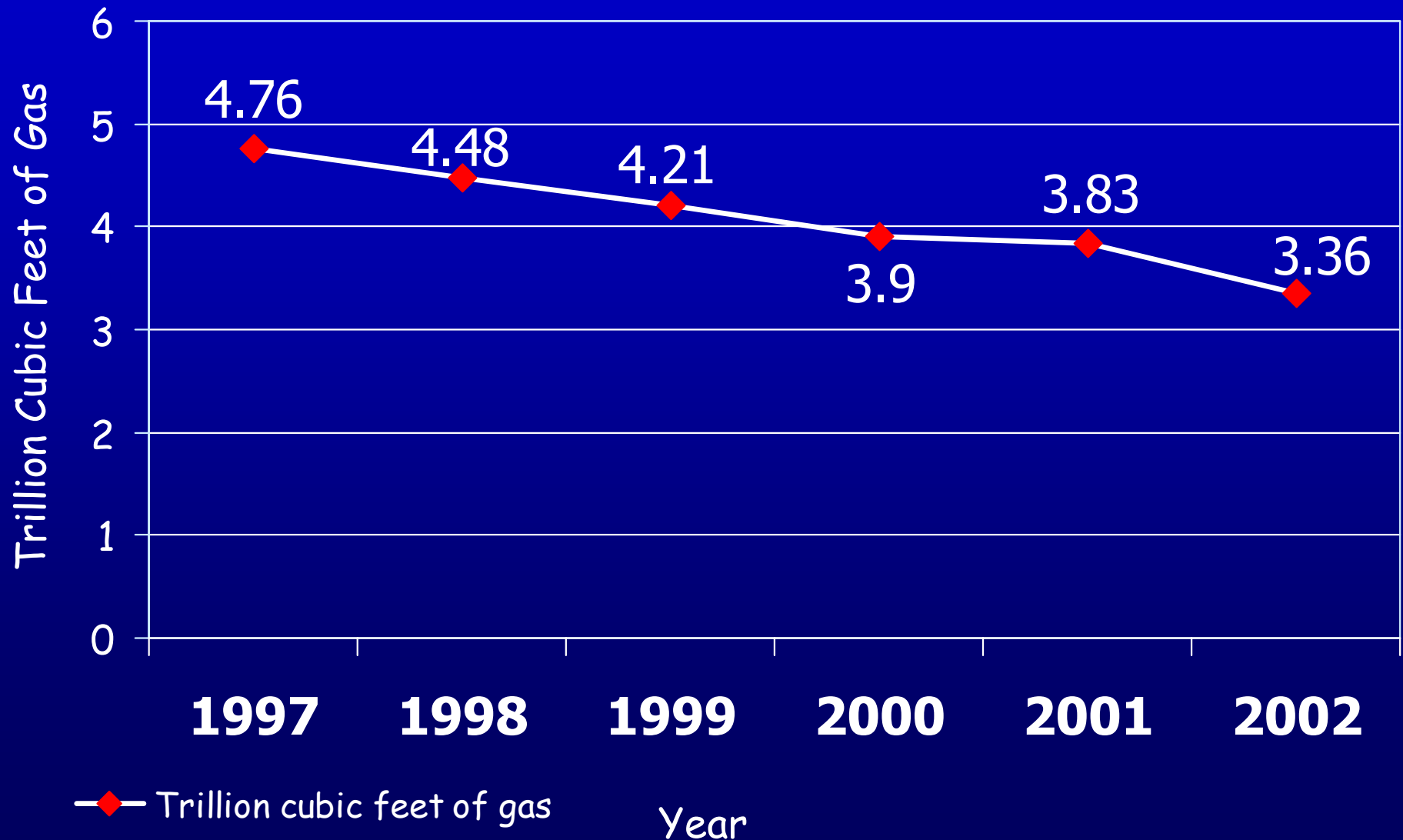
as a Percentage of Total Domestic Production



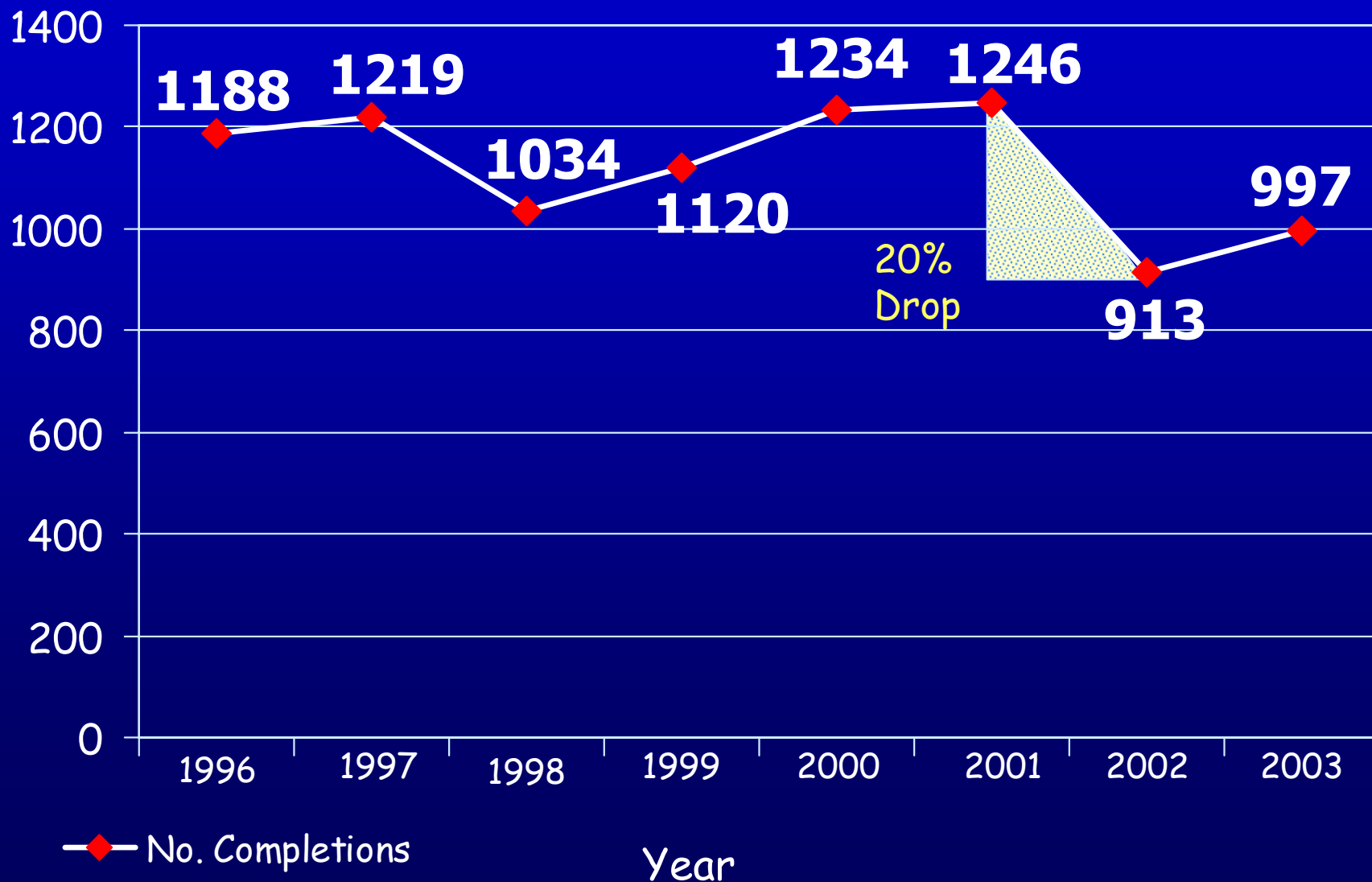
Changes in Gulf of Mexico

1. Shallow water
2. Deep shelf
3. Deep water
4. Ultra deep water
5. LNG

Gulf of Mexico OCS Shallow Water Gas Production



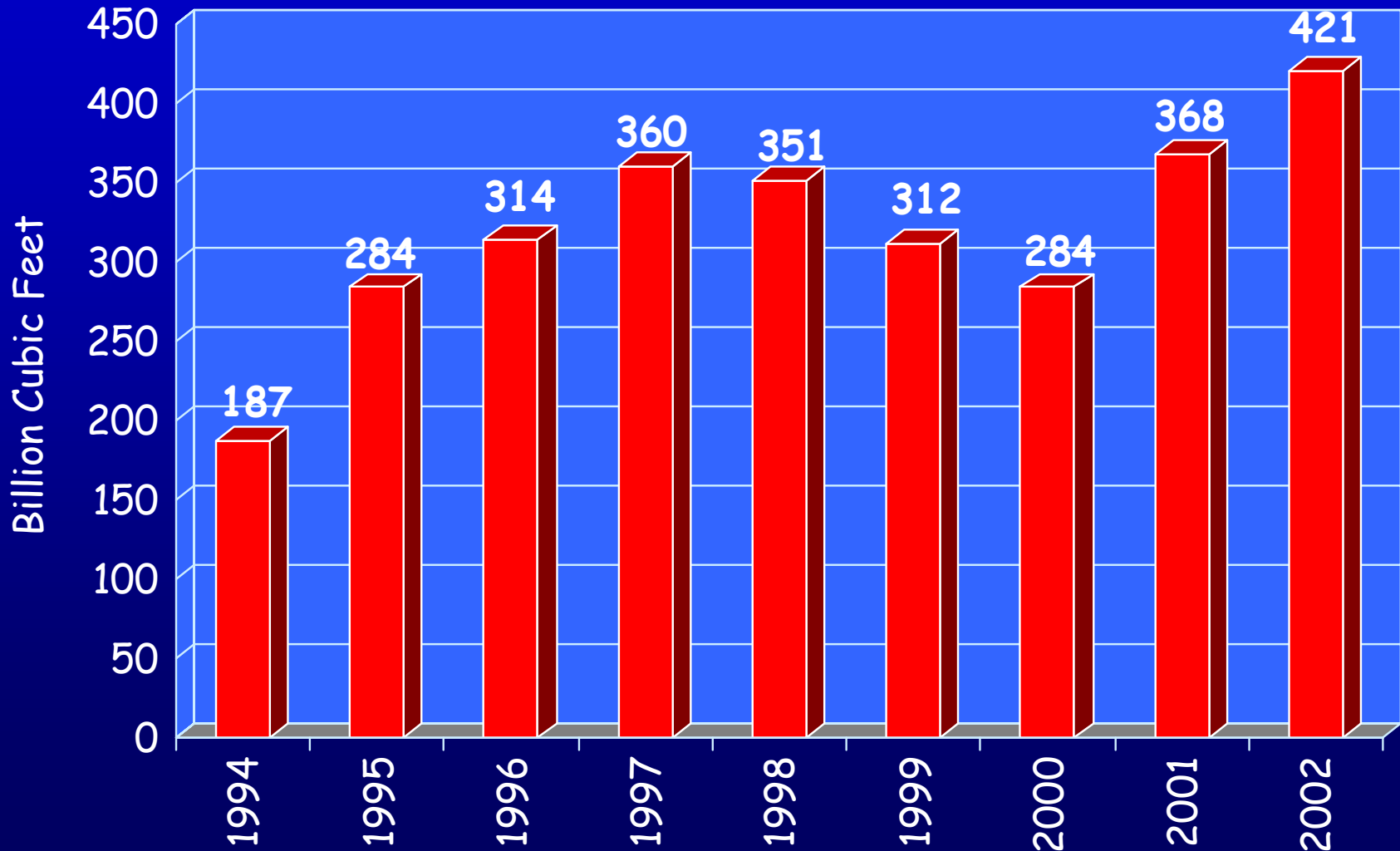
Natural Gas Completions in the Gulf of Mexico OCS 1996 - 2003



Changes - Deep Shelf

- Areas in shallow water but below 15,000 TVD are largely unexplored.
- MMS estimates this area could have as much as 55 TCF of natural gas potential.
- MMS has offered new lease incentives and has a proposed rule to apply incentives to existing leases.
- Several recent discoveries are significant.

Gulf of Mexico Deep Shelf Gas Production 1994 - 2002



Average Well Tests for Deep Shelf Wells 2001 - 2002

True Vertical Depth
(Sub-sea Dimensions in feet)
45 well results

>15,000'	27.7 mmcf/d
>15,000' - 15,999'	13.8 mmcf/d
>16,000' - 16,999'	32.2 mmcf/f
> 17,000'	44.8 mmcf/d

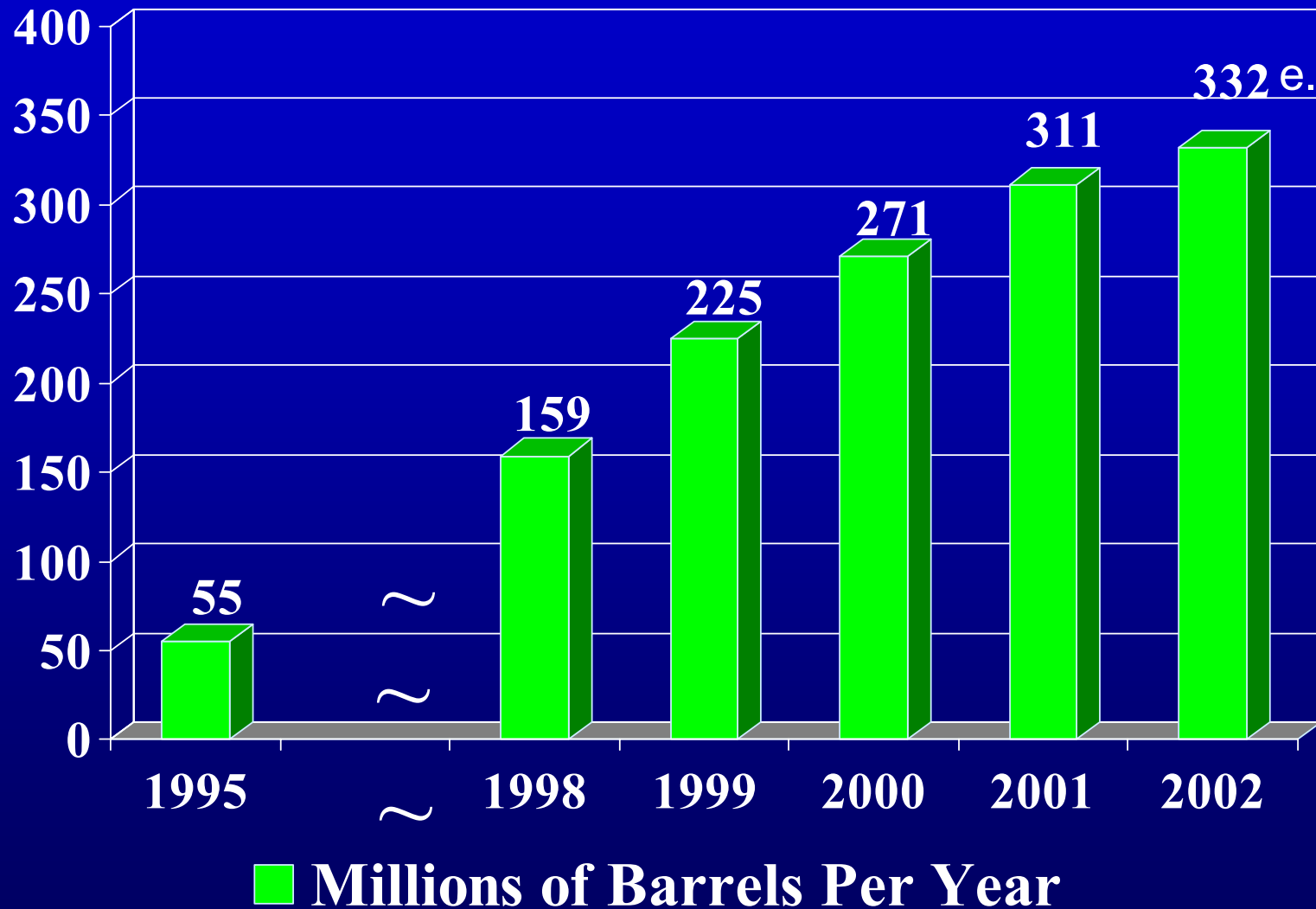
Gulf Deepwater Discoveries-2003

Prospect	Operator	Area/Block	Water Depth
Atlas	Anadarko	LL 50	9,000'
Chinook	BHP Billiton	WR 469	8,830'
Jubilee West	Anadarko	AT 349	8,800'
St. Malo	Unocal	WR 678	6,853'
Constitution	Kerr-McGee	GC 680	5,000'
Champlain	Unocal	AT 63	4,418'
Tubular Bells	BP	MC 725	4,334'
Harrier	Pioneer Nat. Res	EB 759	4,200'
Hornet	Kerr McGee	GC 379	3,850'
Perseus	Marathon	VK 830	3,376'
Lorien	ConocoPhillips	GC 199	2,177'
Goose	Spinnaker Expl.	MC 751	1,600'

2004 Projected Deepwater Production Starts



Gulf of Mexico Deepwater Oil Production



2003 Exploration in Eastern Gulf of Mexico



2003 Exploration in Eastern Gulf of Mexico

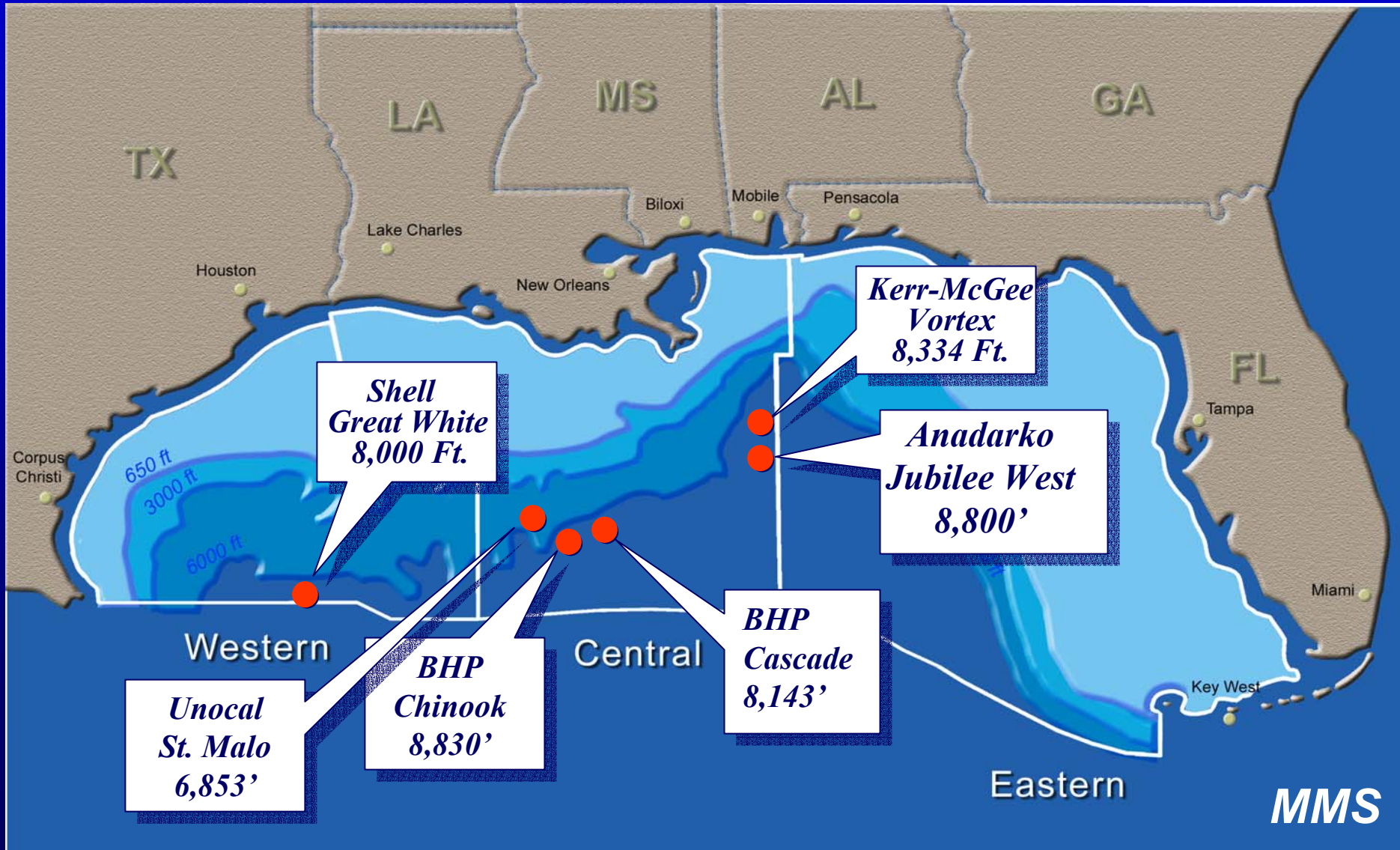


Recent Wells Drilled in E GOM

<u>Prospect</u>	<u>Operator</u>	<u>Block</u>	<u>Depth</u>	<u>Status</u>
Barracuda	Marathon	DC927	8500'	Dry
Atlas	Anadarko	LL50	8810'	Discovery
Atlas	Anadarko	LL5	8810'	Drilling
Spiderman	Anadarko	DC621	8150'	Discovery
Shiloh	Shell	DC269	7500'	No Report
Tuscany	Ocean	DC180	7000'	Dry
Hawkeye	Anadarko	LL360	9200'	Dry

Gulf of Mexico

Significant New Discoveries



Proposed LNG Projects



LNG in GOM

Port Pelican - Chevron Texaco

Capacity: 1.6 billion cubic feet per day

Operational target: 2007

Energy Bridge - El Paso

Capacity: 500 million cubic feet per day

Operational target: 2004

Gulf Landing - Shell

Capacity: 1 billion cubic feet per day

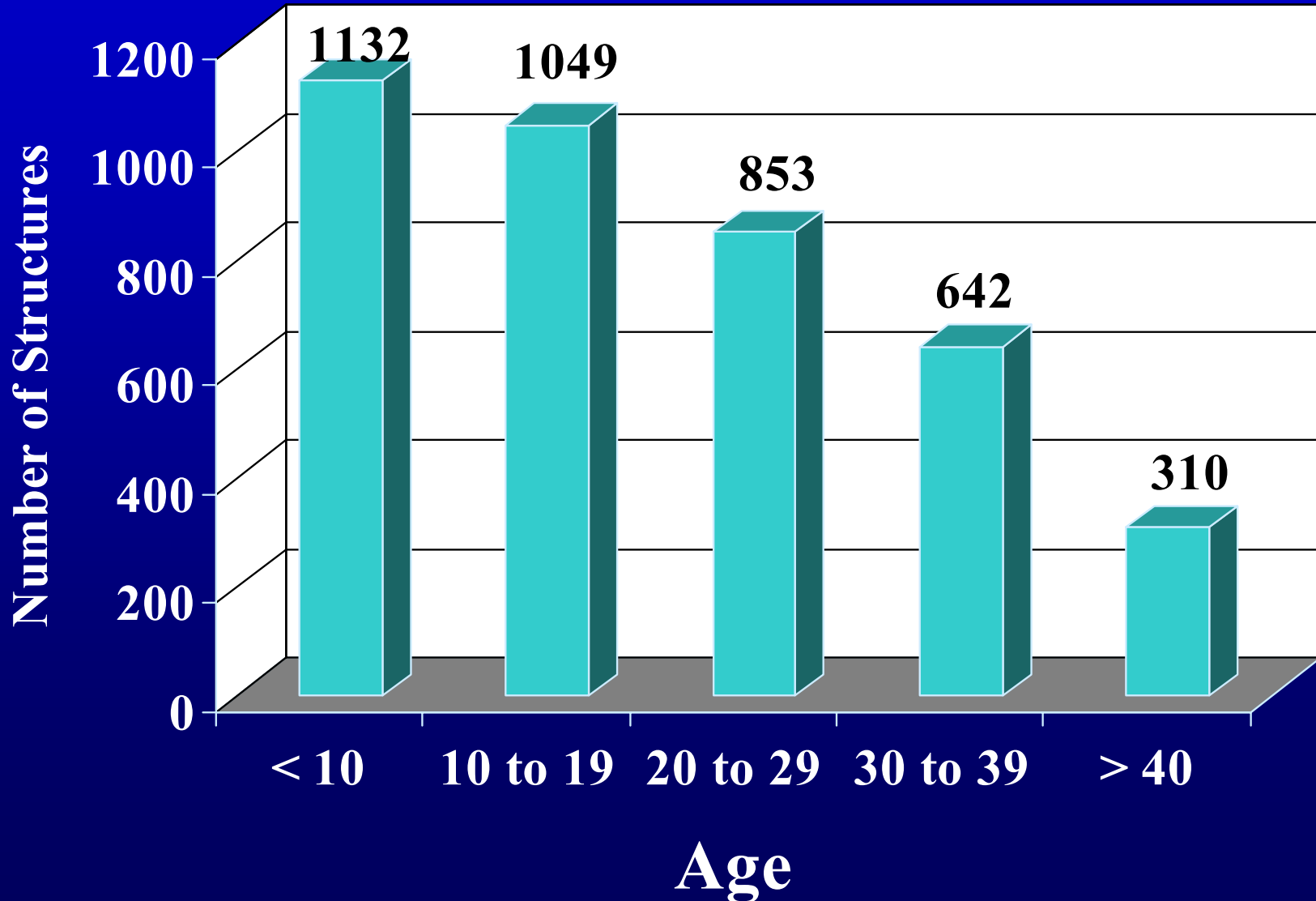
Operational target: 2008 - 2009

Challenges in Gulf of Mexico

1. Aging infrastructure
2. Deepwater currents
3. Pipeline regulatory system
4. Seismic Activity

Average Age GOM ~20 Years

GOM Structures by Age



Challenges

Aging Infrastructure

- NTL 2003 - G16 requires all platforms more than 5 years old undergo an assessment process.
 - Use API RP 2A (working stress design, 21st edition)
- Factors that trigger assessment—addition of personnel or facilities, increased loading, damage, etc.
- If factors triggered, then conduct design level analysis or ultimate strength analysis, and mitigation.
- Focus is on low deck height damage, reuse, or new use

Challenges - currents

Problems with Deepwater Ocean Currents

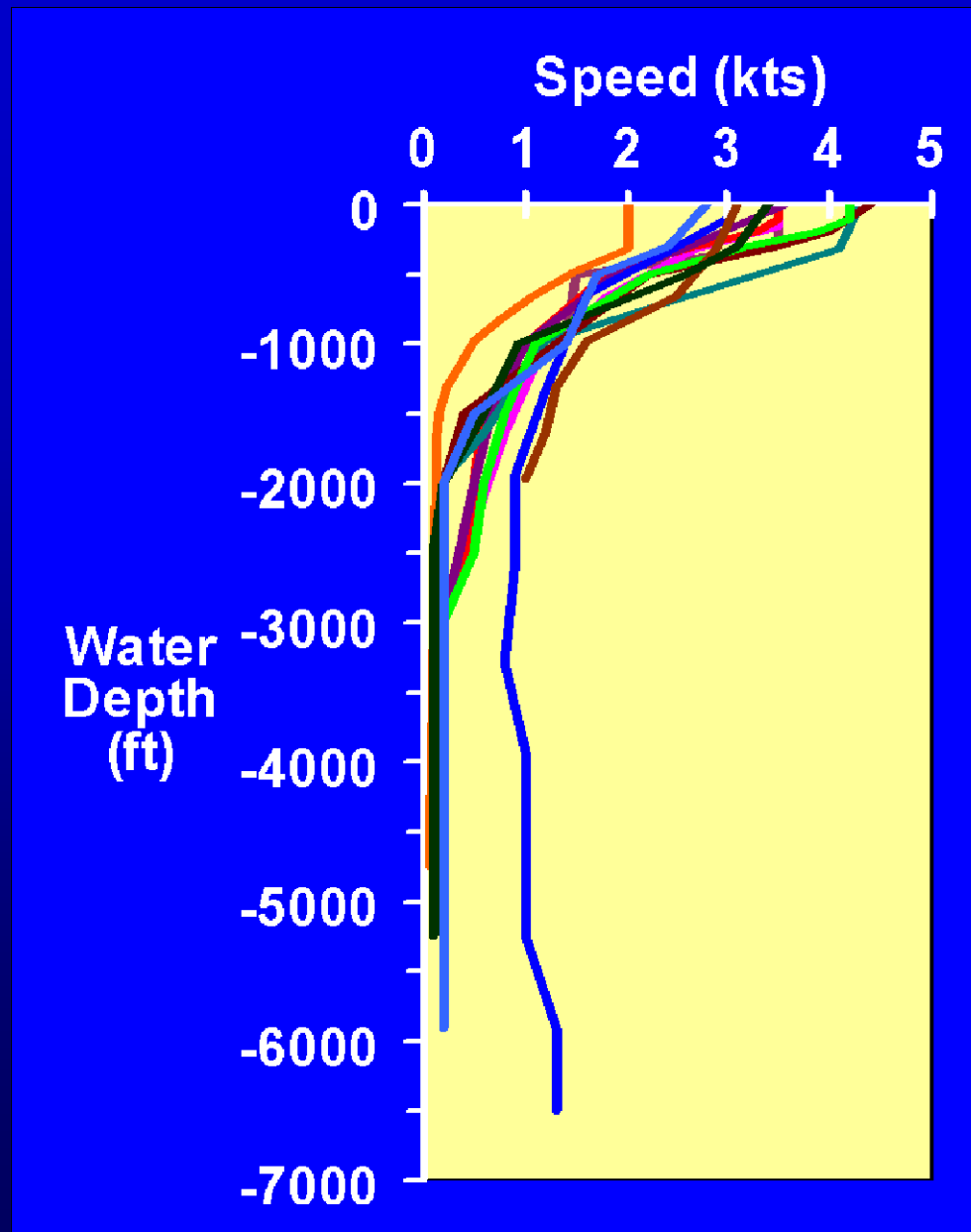
- Several project installations have been delayed by high currents.
- MODU's could not disconnect/contribute to incidents
- Premature replacement of export riser (fatigue)
- Industry's design criteria was formulated in 1980's - early 90's.

Challenges

Deepwater Ocean Currents

- MMS is preparing a new NTL building off requirements in regulations.
- May require full water column measurement by facilities and MODU's.

Vertical Loop/Eddy Speed Profiles



Challenges

Seismic Activity

- National and international events (Strandings) have pushed regulatory action
- MMS issued NTL 2003-G08 requiring shutdown if sperm whales are in the impact zone (500m)
- New NTL to be issued soon extending this to all whales

Challenges - pipeline regulatory System

- MMS pipeline regulations at 30 CFR 1000 are unchanged since 1988.
- Major rewrite is necessary
- Proposed rule in Mid 2004?
- Missing items:
 - Tech. standards -- API, ASME, NACE
 - Require pipeline leak detection systems
 - Provisions for returning to service after storm
 - Require approval for repair
 - Require piggable for large diameter

OCS Lands Act Posters

- 2003 was the 50th Anniversary of the passage of the OCS Lands Act
- MMS produced a Poster commemorating the event
- Poster is available : 1-800-200-GULF or gulfpublicinfo@mms.gov